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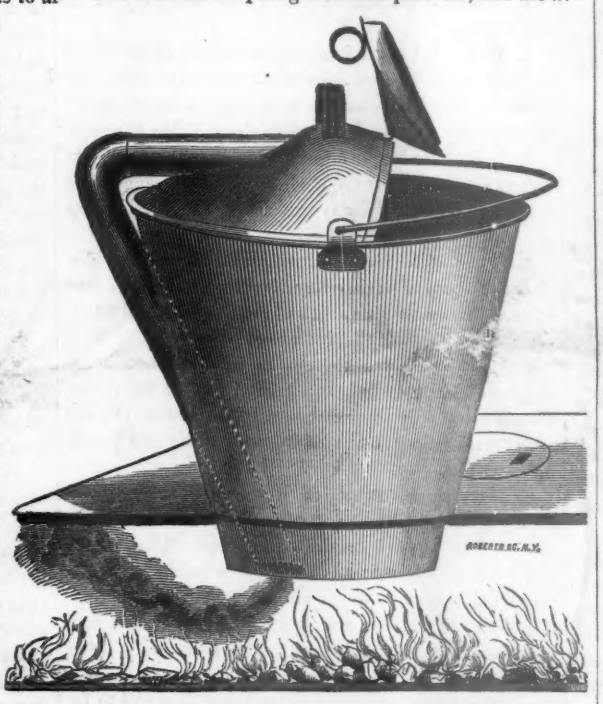
Saul's Odorless Cooking Apparatus.

The disagreeabilities of culinary operations have been and are being materially lessened in modern times by various improvements. We are disposed to smile as we look back to those times when the old fashioned fire-place, with its ponderous crane and trammel was in use, upon which the various utensils for cooking were suspended amid the fire and smoke, or buried in the embers *a la* Dutch Oven, and compare that with the present system of cooking, when the improved range or stove and apparatus are so perfected as to almost automatically perform their respective functions.

In this connection we herewith present illustrations of a most important and valuable improvement, designed to effectually prevent the escape into the apartment of the steam, smoke or odor from any cooking or culinary operation. The first figure exhibits, clearly, a pot or boiler, having a hinged cover, with a pipe extending from it down along side of the vessel and opening into the fire-space beneath, whereby all the vapor is drawn down into and consumed by the fire. The second figure represents a griddle with a movable cover, and openings beneath the rim of the griddle which give passage to all odor, etc., directly into the fire where they are drawn by the natural draft, and prevents their escape into the room to interfere with the most delicate olfactory nerves. Grid-irons, bake-pans, spiders, and all other utensils with which to boil, broil, fry or stew, are fitted with covers upon this principle and operate effectually. It is said steak and onions can be cooked in a parlor if necessary, and no one be the wiser so far as any odor from it is concerned.

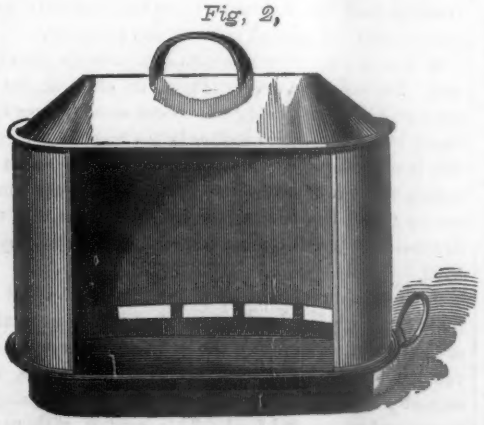
This invention has a large application to various manufacturing operations such as soap-making, bone-boiling, tallow chandlery, and to those chemical operations where it is necessary, for sanitary and other apparent reasons, to prevent the emanations and odors from escaping into and contaminating the atmosphere.

This invention is soon to be introduced to the public, and we have no doubt it will meet with general approval and success. Further information can be obtained by applying to the inventor, S. E. Saul, 72 Henry-st., New York.



SAUL'S COOKING APPARATUS.

Fig. 2,



Improved Motive-Power From Gas.

A very compact gas engine, the invention of Mr. Pierre Hugon, of Paris, has just been set to work in London, for which several important advantages are claimed. The fact of the engine being protected by 12 patents, dating from 1858 onwards, is itself a guarantee that the inventor has been regardless of labor in protecting it. A series of careful experiments has been conducted by Professor Caniz, of the Versailles Lyceum and the results obtained were highly satisfactory. The cylinder of the new machine is vertical, and a rod jointed to the shaft works a bellows, which draws the gas from the ordinary supply-pipes, and forces it into the cylinder, where it is mixed with the necessrry quantity of air to form an explosive compound, a minute quantity of water being supplied within the cylinder to ensure the necessary degree of moisture to prevent the hardening of the oil used for lubrication. The ignition of the oxplosive mixture takes place alternately above and below the piston, and is effected by an ingenious form of slide-valve carrying suitable gas-burners, which are lighted at each half-stroke by an exterior burner continuously kept burning. The cylinder is surrounded by a water jacket, through which cold water is continually circulated. The explosive mixture used consists of about one part gas to nine parts air, and the average of the two experimental tests, each of one hour duration, made by Professor Cazin on December 6 and 8 respectively, showed the gas used in the cylinder to be 171 cubic feet; number of revolutions of shaft, 33-13; weight on brake, 15 kilos.; length of brake lever, 2 metres; diameter of cylinder, 13 in. nearly; stroke, 11 8-10ths inches. The power of the machine was found to be 2 1-3 horse power nearly, and the gas used per horse power per hour 74 cubic feet. It is claimed that Mr. Hugan's is the only gas-engine that regularly and uninterruptedly works up to its nominal power, and it is maintained that the ignition of the explosive mixture by a gas-jet instead of by electricity is decidedly advantageous, inasmuch as electricity is a force too complicated and too delicate for the every-day use of a manufactory or workshop. Gas-engines are, undoubtedly, the best motors extant for obtaining small power—from ¼ to 3 horse—without the necessity of the continual outlay which the use of steam would entail. No expense whatever is incurred whilst the machine is idle, and the full power is available at any moment by simply lighting the gas, whilst its stoppage is effected with equal facility by turning it out.

Petroleum In New South Wales.

At a recent meeting of the Geological Society of Manchester, Mr. E. W. Binney, F. R. S., the President stated that Mr. John Mackenzie, M. E., formerly of Wigan, and now of West Maitland, New South Wales, a gentleman well known to many of the members, had sent him some specimens of Cannel coal (exhibited) from West Hartley, New South Wales, which are stated to be superior to the celebrated Boghead coal. One sample was said to yield 145 gallons, and the other 120 gallons of crude oil per ton. In all respects the samples exhibited so much resembled Boghead coal, both in appearance and streak, as no one could distinguish the one from the other. The New South Wales coal, like the Scotch one, was very variable, soon disappearing and changing into common coal and black stone resembling Blackband. As the Scotch deposit would probably soon be exhausted by the great drains made on it for the manufacture of paraffine oil, this discovery was of great importance. The President said that in 1850 he bought Boghead coal at 13s. 6d. per ton, and it was now quoted at 80s. In 1843 when he read his paper before this society, showing that petroleum could be produced from the decomposition, or rather distillation, of peat at a low temperature, little was known of the origin or utility of this product. In 1848 he (the President) went down to Holland and showed this deposit to Mr. James Young, and explained how the petroleum was formed This he did before he accompanied that gentleman down Mr. Oake's coal pit at Riddings(Easter 1849), and examined the circumstances under which the petroleum occurred there. Since that time it is wonderful to what an extent the manufacture of paraffine oil and the supply of petroleum have reached. Probably no articles of commerce ever made greater strides in the same time. If such had been the case in Scotland and America, no doubt great results would ensue from the discovery of Boghead coal in New South Wales.

A New Stellar Spectroscope.—A new stellar spectroscope has been constructed by Father Secchi, of Rome, which may be serviceable to amateur astronomers. It contains a cylindrical achromatic lens, intended, to form a linear image of the star at the focus of the ordinary eye-peice of the telescope. Between the eye-piece and the cylindrical lens, is placed a prism as short as possible, with direct vision, and without deviation, and called Amich's prism, after its inventor. The spectra produced by this simple arrangement are very remarkuble for the brilliancy of their tints and the sharpness of their bands.

On National Standards for Gas Measurement and Gas-Meters.

By George Glover, Esq.,

Formerly Lecturer on Natural Philosophy, Royal College of Surgeons, Edinburgh, and Vice-President Royal Scottish Society of Arts, and Superintending Medical Inspector General Board of Health, Whitehall.

From the London Journal of the Society of Arts, No. 424.

[continued.]

The dry gas-meter has been brought to its present condition of excellence by successive stages. The essential improvements, invented by Mr. William Richards, and patented by Messrs. Crall and Richards in 1844, consisted in the introduction of the diaphragm and the direct action disk. The theoretical accuracy of the principles which the invention of Mr. Richards involved, time and experience have fully established. The patentees, however, failed to reduce those principles to practice, in producing a good and durable instrument, and they abandoned its manufacture. Mr. Crall havig secured the patent, Mr. Thomas Glover, in 1845, commenced the manufacture of the meter, as Crall and Glover's patent dry gas meter, and ultimately he manufactured it as his own, having from time to time introduced such improvements on the meter as experience pointed out to be necessary to render it a reliable gas-meter. To him belongs the merit of having imparted to Mr. Richards's invention a real and practical value by the production of a correct and durable instrument.

And here I may be allowed to refer to certain improvements made in the dry gas-meter by myself. The meter of Messrs. George Glover & Co. has a large and distinct dial, which shows at a glance the number of cubic feet of gas passed, the number of the meter's capacity per hour and per revolution, and the marks of identity, the maker's name, and the date of manufacture. all of which the "Sales of Gas Act" requires. These points of information are inscribed on an enamelled dial, in legible and indellible characters; and they are necessary for reference, especially when disputes arise between buyer and seller, in which case the marks of identity and capacity are essential. These should not be entrusted to flimsy badges of thin metallic substances, which become tarnished and illegible, accidentally fall off, and can easily be transposed for fraudulent purposes.

A slot is introduced in our manufacture, and a pin which connects the valve and valve-rod. This facilitates the adjustment of the two sets of valves necessary to the uniform flow of gas, without which steady lights cannot be obtained. The attempt to adjust the position of the valve-pin by giving a curvature to the valve-arm is very objectionable. The valve arm has to be made soft, so as to admit of this finger and thumb adjustment, its protracted immersion in gas rendering it still softer. The result is that the rod becomes more or less curved during the action of the meter as it transmits force, in the direction of its length, as a thrust or as a pull alternately.

Another improvement I have effected is the introduction of a slot in the tongent of the meter, and the placing a shoulder or rest on the tangent pin, the flat surface of which rests on the upper surface of the tangent. The pin is secured in its place by a pin from below, the flattened head of which fixes it firmly at any desired point of the slot. This arrangement keeps the pin in a perfectly vertical position, and admits of the meter being registered with care and precision. To secure uniformity we stamp the cases and internal parts of our meters. This we do by steam power, and we are thereby enabled to effect a saving in their production.

To reduce to practice the idea of a machine for the accurate measurement and correct registration of gas, the experience of half a century has shown to be no easy problem. The construction of a good and durable dry gas-meter involves a multiplicity of chemical and mechanical considerations, to each of which its due weight must be assigned.

As I said, when speaking of the standards, a subtle, invisible, elastic, aëriform body, very complex in its chemical constitution, susceptible of change in condition and volume from slight variations in temperature and pressure, has to be accurately measured, and the result of that measurement must be accurately recorded. The instrument must be self-acting, and must act in a closed chamber, continuously or at intervals, requiring no adjustment or interferance of any kind. All its parts which come in contact with gas must be made of anti-corrosive metal; while the materials, forms, and combinations of its different parts must be so arranged and so adapted to each other that, when put together as a whole, it shall work easily, steadily and correctly.

Many have a strong prejudice against using leather in dry gas-meters. This prejudice is well-founded when the leather is not properly prepared for gas, or when it is used as a hinge for the doors of the measuring chambers in meters of oblique action, when it is liable to give way. But when it is properly prepared for the reception of gas, which contains carbolic acid or creosote—an excellent antiseptic for animal texture—and its flexibility is used to a limited extent, it will remain sound and pliable for any length of time. The dry gas-meter, in fact, obviates, I respectfully submit, all the objections to the wet meter. I may be allowed to state *seriatim* its different points of superiority.

1. It measures accurately, and does not vary in its registration.

2. It does not cause jumping, or sudden extinction of lights, the former a common source of annoyance, the latter not free from danger, especially in large assemblies, and on railway lines where signal lights are used.

3. It does not require to be opened that water may be put into it; thus escape of gas from the plugs being carelessly left open, always offensive, and occasionally producing explosions, are averted.

4. It cannot be tampered with without showing distinct evidences of having been so; and it is thus free from the many temptations and facilities to fraud which are characteristic of the wet meter.

5. It does not allow the gas to pass without being registered, a source of much greater loss to companies than is commonly supposed, and which is caused by the water-level falling to a point at which the gas passes unregistered.

6. The frequent supply of water now rendered necessary by the small range of error allowed by the "Sales of Gas Act," the vigilant attention required to prevent fraud, and to ascertain when the gas is passing unregistered, need three times the number of inspectors requisite where dry meters are used; whilst in testing meters the expense of inspectors and instruments is three times as great with the wet as with the dry meter, which thus effects a great saving to gas companies and to local authorities.

7. The dry meter does not require to be placed in the basement or lower part of the house, but may be put anywhere. The attempt with wet meters to prevent the jumping of the lights by giving all the pipes a gradual decent to the meter, so as to admit of the water trickling back into it, besides being impracticable, is expensive and detrimental to house and property.

8. The dry meter works with less pressure than the wet. Not only is a saving of gas thus effected, but in large cities where, during the winter season, dense fogs occur, the low pressure meters in the mains during the day is not adequate to move the wet meters so as to supply enough of gas for the burners, and only small smoky flames can be obtained from them, but with the dry meter under all circumstances there is sufficiency of light.

9. The action of the dry meter cannot, like that of the wet, be arrested by frost, causing a total extinction of the lights. This makes the dry meter especially advantageous on railway lines, precluding, as it does, the necessity of keeping up fires near the meters during a severe and protracted frost. This applies with peculiar force to countries where the cold is intense, and where the evil is attempted to be combatted by putting spirits or glycerine into the meter.

10. Made of anti-corrosive metal, and not subject to the power of the chemical constituents of coal-gas and water, the dry meter is a much more durable instrument than the wet.

[To be continued.]

[Written for the San Francisco Mining Press.]

Sodium-Amalgam. Reply to Prof. Wurtz.

Messrs. Editors.—In your Mining and Scientific Press of September 29th, 1866, I find a paper on the "Utilization of Sodium in Gold and Silver Amalgamation," read by Prof. Wurtz before the American Association for the advancement of Science, at Buffalo, in which "some objections are considered," whereby Mr. Wurtz, with a sort of self-confidence, accuses me of errors, fallacies and nonconcurrence in opinion with other Californians experienced in amalgamation.

Mr. Wurtz says: Kustel has erred mainly in supposing that the purpose of the sodium-amalgam was to decompose silver ores by extracting their sulphur by sheer force of chemical affinity."

The *chemical* action by which the sodium decomposes silver ores, is the only fact which can be proved as being effective in the treatment of such ores. Whenever sodium-amalgam comes in contact with silver sulphides, chlorides, tellurides, etc., the sulphur chlorine, tellrium, which is set free, is found immediately combined with the sodium in the solution, and only an equivalent quantity of silver is amalgamated—no more. Is this no chemical action? What does it matter whether this chemical action is purely a chemical one, or whether it is combined with an action which "appears" to be in a manner electric, if there is no more silver reduced than what was freed by action of chemical affinity? The "highly electro-positive condition of the quicksilver" is certainly a most interesting scientific topic; but the adoption of this theory does not change the practical result of using sodium-amalgam on silver ores, of which only such combination can be reduced perfectly, with a proportional quantity of sodium, as are free of antimony; but this equivalent quantity is just the obstacle which prevents the application of sodium, for two reasons:

First, On account of its being too expensive. Second, Because it causes a greater loss in quicksilver, by rendering the latter liable to be ground to flour, (if used on silver ores rich in sulphurets, in the required proportion, in iron pans.)

As to the ineffectiveness of the sole electric condition of the quicksilver; that can be illustrated by the barrel-amalgamation with common quicksilver. Here the galvanic action is produced by the positive iron and the negative quicksilver, between which the dissolved salts of the roasted ore serve as a conductor. This galvanic current assists greatly in the amalgamation of the silver; but if half of the charge should be unroasted ore, the quicksilver although in an electric condition, does not effect the sulphurets in the least. Only the roasted ore being amalgamated, after it is reduced to a metallic state by chemical action.

Mr. Wurtz says further: "Kustel's experiments having been based upon an incorrect idea of the mode of action, have but little applicability *pro or con*, and inconsistencies were pointed out in his conclusions."

I connot understand how experiments can be made upon an "idea" of the mode of action, which (that is the mode of action), must be found out by the experiment before the idea can be formed. The conclusions which I based on experiments did prove to be entirely correct; even the remark that *no saving* of quicksilver can be expected by the use of sodium-amalgam in treating silver ores. In regard to the "inconsistencies," in plural, Prof. Wurtz says:

"Kustel's conclusions that iron pans cannot be used with sodium, for instance, is shown to be fallacious by very numerous working results now on record; in any case, it is fortunate that one negative result has little weight against concurrent positive results of many others.

When I said that "silver ores cannot be worked with sodium in iron pans," I did not mean the physical "cannot," but the pecuniary. If some people do use sodium on silver ores, without minding the result, they of course establish the fact that sodium-amalgam *can* be used in pans. A most simple experiment however, is sufficient to show the difference between an iron pan and a wooden or stone arastra; take a small quantity of

sodium-amalgam in an iron ladle or spoon (not coated with tin), and the same quantity of a like sodium-amalgam in a wooden or stone vessel—both under water; it will be found that the sodium in the ladle will be used up in less than *one minute:* whilst that in the other vessel will continue for *half an hour*, and longer. The ladle appears amalgamated. If in this case some pulverized silver ore should have been introduced, together with the sodium-amalgam, which of the vessels would prove unsuitable—the iron one, consuming the sodium in the shortest time, or the stone vessel where all the sodium is left to act upon the ore? The result and common sense will answer. Mr. Wurtz says: "the rapid and perfect collection and separation from a slime or pulp of contained and diffused silver amalgam, by the use of sodium-amalgam, would alone give it an obvious importance." This may be so; but although silver amalgam is not silver ore, the rapid and perfect collection from slimes cannot be executed in pans; it must be done in wooden barrels with a formidable amount of quicksilver in which some sodium is dissolved.

As to the one negative result against many concurrent positive ones, Mr. Wurtz would be differently impressed if he should visit the mills in Nevada, where silver ores are treated. Our mill-men try everything, and use whatever is found economically practicable, in spite of negative writing; but the use of sodium does not seem to be applicable to the silver ores of Nevada, although it is used to some extent for the amalgamation of gold in the quartz mills of California. Where the "very numerous working results" were obtained, Prof. Wurtz did not state.

G. Kustel, M. E.

Prof. Wurtz's Reply to Mr. Kustel.

57 Broadway, New York, November 5, 1866.

Editors American Gas Light Journal:

Sirs,—I note in the San Francisco *Mining and Scientific Press*, of October 6th, just received, some criticisms by Mr. G. Kustel, upon my communication to the American Association at Buffalo. The previous number of the *Press* having failed as yet to reach me, I do not know whether my paper was fully before Mr. Kustel; but I judge not, from his concluding remarks, to the effect that I "did not state where my working results were obtained." Your readers are aware that many working results have been reported by me.*

I ask a little of your space for a few words in rejoinder to some of Mr. K.'s paragraphs, which might convey incorrect impressions.

Mr. Kustel still persists that sodium-amalgam can only act by *decomposing* silver ores chemically, according to its long known and familiar power of removing sulphur, chlorine, &c., from such ores.

I reiterate that he has misapprehended the mode in which I propose to use sodium-amalgam in operating upon silver ores. I do not propose to interfere with the use of *iron* and other reducing elements, as used heretofore, but prefer to introduce a small quantity of sodium as an accelerating agent.

I would recommend to Mr. K. (who is of course familiar with the great slowness of the decomposition of moist chlorid of silver by metallic iron), and to other metallurgists, the following little experiment:

Place in a mortar together some iron filings, quicksilver, and precipitated chlorid of silver; stir with the pestle and add therewhile a little solid amalgam of sodium, the sodium in which may be but a small fraction of that equivalent to the chlorid. The result will be an almost instantaneous conversion of the mass into pasty silver-amalgam. If Mr. K. is willing to ignore such phenomena as this, as signifying nothing, and having no bearing upon the working of silver ores, I have but to submit respectfully that this is carrying an assumption of *practicality* (?), and an affectation of contempt for science, far beyond the bounds of common sense. As to my other use of sodium in silver-working, in separating and collecting silver-amalgam from materials containing it diffused in a pasty and floured condition, by virtue of the increased cohesion which I have discovered a minute proportion of sodium to give to such pasty amalgams; he admits that "this may be so;" and I fully agree with him, that "silver-amalgam is not silver ore," though I don't see clearly the bearing of the observation.

Another idea of Kustel, that iron pans must be eschewed when operating with sodium-amalgam, he still adheres to; his reason being, as I understand it, the local voltaic action set up upon mutual contact of iron, sodium-amalgam and water, which should soon remove the sodium. I have, nevertheless, repeatedly pointed out, as the result of my own experiments, that when the iron becomes enfilmed by the amalgam, this action is greatly retarded, and with some kinds of iron wholly arrested. I wish now, however, to show conclusively that this bugbear of his is not worth consideration in pan-operations. A moment's thought will show any one that the mullers ought to keep the quicksilver so diffused in globules throughout the slime that no contact of consequence with the iron of the pan can occur. When such diffusion does not take place it merely argues imperfect manipulation.

I have to complain of Mr. Kustel's apparent insinuation that I have fallen into a common method of "putting the cart before the horse," by trying to force the results of experiment into accordance with a preconceived "idea." I claim that my ideas are solidly founded upon experiment; and still maintain that Mr. Kustel's assumptions that sodium may only be used on silver ores as a *decomposing* agent; and that therefore it is necessary also to go the extreme of decomposing the ores of the baser metals, thus contaminating and flouring the quicksilver; and his other assumption that the iron walls of a pan necessarily neutralize and destroy the efficiency of sodium under all circumstances; and his experiments based thereupon, as reported, have no real applicability to the case, as I said in my Buffalo paper. I believe that, apart from the "self-confidence" of which Mr. K. (if I apprehend him) accuses me, I can appeal to *facts*, that have been set before your readers, to sustain these claims.

I also claim that Mr. Kustel's opinion that sodium is "too expensive" to be applicable as I propose, is untenable in the extreme. As a *reductio ad absurdum*, let us suppose that *it were necessary*, as he believes, in the reduction to amalgam of the silver in an ore (the chlorid for instance), to use an *equivalent* quantity of sodium. Then, as one pound avoirdupois of sodium is equivalent to 4.7 pounds of silver, or about 75 ounces, worth at $1.29 per ounce, $96.75; it is necessary to show that the cost of sodium must approach this latter sum (in coin) per pound, to prove its use for "decomposing" chlorid of silver unprofitable, and give any currency to this "idea" of Mr. Kustel.

I fear it may be necessary for me to add, *distinctly*, that these calculations are intended only as illustrative, else I might be accused of justifying the direct use of sodium as a reducing agent in silver metallurgy, the time for which has not yet come.

Not wishing at this time to take up more of your space, Messrs. Editors, I remain

Very respectfully yours, &c.,

Henry Wurtz.

* Since the above was written, I have seen the preceding number of the *Press* referred to, and find, as I had conjectured, that Mr. Kustel had before him only the *New York Tribune* version of my Buffalo paper; which was merely an abstract, and an incomplete one at that, of a few of the concluding paragraphs of the said paper. H. W.

Decision in Relation to Torpedoes.—On a final appeal to the Supreme Court of the District of Columbia, before Judge Carter, the case of E. A. L. Roberts, and others in interference on a claim for the use of torpedoes for increasing the productiveness of wells, a decision has been rendered in favor of Roberts.

Curious Experiment.—Take a wine-glass, fill it full of wine—see that you fill it drop by drop, with as much wine as it will hold, without running over—Then drop into the wine as many pins as the glass can cantain, and the wine wil not run over. Take a fresh wine-glass of similar size, pour the wine from the first glass into it, and you will have a glass full of wine and a glass full of pins.

The Process of Roasting Ores.

Translated from the German of F. Plattner, for the Mining & Petroteum Standard and Am. Gas-Light Journal, by

J. H. TIEMANN.

NUMBER V.

3. *Matt.*—This mill product consists chiefly of Fe^2S, FeS in different proportions, so that either the Fe^2S is in larger proportions than the FeS, or—which less frequently occurs—that the FeS is in larger proportions than the Fe^2S. In the former case we may suppose the matt composed of $x(Fe^2S, FeS)+({}^mFe^2S, FeS)$ and in the latter case as $x(Fe^2S, FeS)+(Fe^2S, {}_nFeS)$, in which case, however, a small part of the protosulphide and subsulphide is sometimes replaced by other metals, as subsulphide of copper, sulphides of lead, zinc, manganese and silver; the matt also often contains slag mechanically combined, which, in a furnace matt containing sulphide of zinc, and consequently difficultly fusible, may often amount to 20 per cent. When ores consisting chiefly of pyrities, partly in a natural and partly in a roasted state, are smelted to a matt in a furnace, under a covering of slag, the sesquioxyd of iron in the roasted part is reduced, at the expense of the sulphur of the raw part which escapes as a vapor, to a protoxyd, and combines as such with the earthy materials forming a slag which afterwards combines with the slag used as a covering. * When the slaging (fluxing) is imperfect, which occurs when there is a lack of earthy material, particularly quartz, a part of the protoxyd of iron may be taken up by the matt, an oxysulphuret may be formed $({}_mFe^2S+FeO)$ and a matt may be formed having the formula, ${}_mFe^2S+{}_nFe(S,O)$. If the ore was not free from other metals, which are likewise inclined to separate as sulphurets, they will be included in the compound.

Pulverized matt when roasted, acts similar to magnetic pyrities. If it be roasted at a low temperature and with proper precautions, at first, besides free sesquioxyd of iron, considerable quantities of protosulphate is formed, which afterwards, at an increased temperature, as in the case of that formed from magnetic pyrities, is changed to persulphate under evolution of sulphurous acid; the amount formed is about 21 per cent., having 7 per cent of sulphuric acid.

4. Kupferkies (Copper Pyrities) Cu^2S, Fe^2S^3 when roasted, acts similar to magnetic pyrities, except that besides a small quantity of persulphate of iron, a sulphate and free oxyd of copper is formed. If coarsely pulverized, copper pyrities be roasted at a dark red heat and constantly stirred, and atmospheric air admitted until the smell of sulphurous acid disappears, it changes to a spongy powder, which, when cooling, changes to a dark red color. This powder consists chiefly of sesquioxyd of iron, a suboxyd and protoxyd of copper, and contains protosulphate and persulphate of iron, and sulphate of copper—the latter in considerable quantities. If this product be now submitted to a bright red heat, and air admitted, the protosulphate of iron (as in the case of pyrities and magnetic pyrities) changes to persulphate; and there remains, besides the sesquioxyd of iron and the protoxyd of copper, only sulphate of copper and a little persulphate of iron with 20 per cent. of sulphuric acid. If the temperature be still increased, these sulphates are decomposed, leaving the free oxides of iron and copper, the sulphuric acid escaping partly as such, and partly as sulphurous acid and oxygen.

5. Kupferstein (Copper matt). This mill product, when containing a high percentage of copper, consists principally of ${}_mCu^2S, FeS$; when containing a medium percentage of copper Cu^2S, Fe^2S; and when having a low percentage, $m(Cu^2S, Fe^2S)+FeS$, or in the latter case is a mixture of copper matt ${}_mCu^2S, FeS$ with iron matt Fe^2S, FeS, in variable proportions, so that a copper matt with a very low percentage of copper, may have the composition $(Cu^2S, Fe^2S)+FeS$. The copper matt sometimes contains other sulphur metals, as lead, zinc, manganese and silver, which replace one another; and is not always free from a mixture of sulphide of antimony or arsenic, which unite with the disulphide of copper, and pass into the matt.

When pulverized copper matt is exposed to a dark red heat and air admitted, it glows readily in consequence of the oxidation of its components; at first it is converted into suboxyd of copper, sesquioxyd and protosulphate of iron, sulphurous acid passing off, but after the sulphides, being kept constantly stirred, have been mostly oxidized and the temperature increased decomposing the protosulphate of iron, it is converted into free oxyd of copper and sesquioxyd of iron, with sulphate of copper and persulphate of iron, having about 18 per cent. of sulphuric acid; by continued roasting and constant stirring, the sulphates of copper and iron—the former only at a bright red heat—are decomposed, leaving free oxides, while sulphurous acid, oxygen and sulphuric acid pass off, the latter in the form of white vapors.

6. Bleiglanz (sulphide of lead) P_b S, when pulverized and exposed to a dark red heat, air being admitted, glows of itself in consequence of the oxidation, evolves sulphurous acid, and at a continued dark red heat, is converted into sulphate and free oxyd of lead. A higher temperature, not sufficient, however, to cause a sintering or smelting of the free oxyd, produces no further change, for the reason that the sulphate formed during the roasting cannot be decomposed and converted into free oxyd. As the proportion between the sulphate and free oxyd varies in proportion to the amount of other metals present, this portion of our subject will be treated more fully further on, when we come to explain the chemical changes which take place in the roasting of sulphur metals.

7. Wismuthglanz (sulphuret of bismuth) $B_1{}^2 S_3$. In a powder, when heated on a clay saucer in a muffel, just to redness, air being admitted, glows of itself, evolves sulphurous acid, and is very soon converted into a light grey powder without sintering (caking). This powder consists of an oxyd and sulphate of bismuth. If the substance contained copper pyrities, the product when cool has a dark yellowish green color. If this be heated in a glass tube to a bright red, it smelts, with the evolution of a little sulphuric acid, to a light brownish grey mass, which on the edges is translucent.

8. Zinkblend (sulphuret of zinc) yellow and brown, Z_n S and Black F_e S + $^3Z^n$ S; is of all sulphur metals which require to be treated by fire, the most difficult to roast. Even when in a fine powder, it requires an uninterrupted red heat and strong draught of air for its complete oxidation, under which circumstances sulphurous acid is evolved, while free oxyd and more or less sulphate of zinc (neutral and basic) is formed. If the blend contains iron sulphuret, either as a component (blackjack) or as an admixture, this is converted into free sesquioxyd. If, during the roasting, the temperature be kept pretty high, but a small quantity of neutral sulphate of zinc is formed, and that which has been already formed at a lower temperature, in large quantities, resolves itself into basic sulphate, evolving sulphuric acid, oxygen, and anhydrous sulphuric acid. The basic sulphate is decomposod to a free oxyd, only at a white heat. If the blend contains sulphide of cadmium, this acts in precisely the same manner as the sulphide of zinc.

9. Sulphuret of Manganese, $M^n S^2$ or M^n S, found in combination with most of the sulphurets, and mill products from sulphur metals, when heated to a red heat and air admitted, is decomposed to sulphate and red oxyd of manganese; continued roastiug at a red heat produces no change; at a higher temperature the sulphate formed is decomposed to sulphurous acid, oxygen, anhydrous sulphuric acid, and red oxyd.

* When a part of the sesquioxyd has been reduced only to magnetic oxyd (Sesquioxyd plus Protoxyd), and is present in any quantity, it crystalizes in beautiful glistening octahedrons, if the slag, in a large mass, be allowed to cool slowly.

Babbit Metal.—Take 24 lbs. copper and melt it in a crucible; then add gradually 24 parts pure tin and 8 parts antimony. Great care must be exercized in adding the tin to the copper. This composition is rendered softer by the use of a greater quantity of tin. It is first run into ingots, then melted and cast to form the journal boxes, &c.

Sir Morton Peto and Our Mineral Resources.

Sir Morton Peto, the great railroad king of England, has just published a statistical work on the resources and prospects of America, in which according to *Harper's Weekly*, he says: The mineral wealth of the United States, is very great. Gold is found in some of the Eastern States, particularly in Virginia, the Carolinas, and Georgia; and the gold producing regions of the West—still very partially explored—including the States of California and Oregon, and the Territories of Utah, Nevada, New Mexico, Dacota, Washington' Colorado, Montana and Arizona—an area of more than a million of square miles, extending from British Columbia, on the north to Mexico on the south, and from the eastern slope of the Rocky Mountains to the Pacific ocean. Silver mining may be said to be only in its infancy, although in New Mexico and Arizona, which were acquired from Mxicio, in 1848, silver mines have long been worked. In the hands of another race, and under a better government, they will now probably become greatly more numerous and productive. An immense lode of silver ore, known as the Comstock Lode, has been discoverd in Nevada, which is rapidly increasing in population, while new mines are continually being opened in different localities. Iron ore exists in great abundance in the United States, and is widely distributed. Perhaps in no part of the world is it more abundant than in the State of Missouri, where hills are entirely formed of it. Little, however, has been done to turn the iron ore of the Missouri, to account. The district is deficient in coal, and the railroad system is too incomplete to supply this want. Another district extremly rich in iron ore, but hitherto almost unproductive, lies in the northern part of Georgia, passing into Alabama. It is in Pennsylvania and New-Jersey that iron ore is at present mostly worked. There are iron ore producing districts also, in New-England, New-York Ohio, Virginia, and both of the Carolinas; and during the last ten years, a considerable amount of capital has been invested in iron mining in Michigan on the southshore of Lake Superior. But the iron masters of Amerion, hardly hold their ground against competition with imported iron. The vast supplies of iron which America possesses, are rather to be regarded as a store for future ages, than as a source of wealth to be largely developed in the present. There are very rich mines of copper on the shores of Lake Superior, near Keweenaw Point, where masses of native copper of extraordinary size have been found.—Copper mines have also been wrought in New-Mexico. Lead is wrought, but not to a great extent, in Missouri, Wisconsin, and Iowa.—Quicksilver has been found in California, but the produce is not very considerable.

The coal-fields of America are the greatest in the world. They are computed to be thirty-six times the extent of those of Great Britain and Ireland. They are chiefly situated on the basin of the Mississipi and its tributaries. The whole annual produce of coal, however, does not yet amount to much more than fourteen millions tons, or about one-fifth of that of Great Britain, is the ordinary fuel for domestic purposes, and is even employed for steam engines, while the Americans dispense with steam wherever they can avail themselves of their "water priveleges." The abundance of iron, coal, and limestone in America, however, is suggestive of great expectations concerning the future, when the country shall be more densely peopled and able to make use of its own mineral treasures. Sir S. M. Peto devotes a chapter to petroleum, or rock-oils, and gives a most inteersting account of the American oil-wells. The oil which flowed from oil-springs was merely collected by skimming it from the surface of the water on which it floated, till 1858, when a well was sunk in Pennsylvania, and at once began to yield 400 and afterwards 1,000 gallons a day. Great excitement ensued, and a search for oil began throughout the whole district Many of the experiments were unsuccessful, but when oil was struck the fortunate adventurer was suddenly enriched. Some of the wells yield oil without the trouble of pumping; it flows from them in copious streams. Some wells yield 2,000 barrels, and one, even 3,000 barrels daily. Towns huve sprung up in the oil-district ef Pennsylvania; and in Oil City, business is now transacted to the amount of $3,000,000 annually. Other parts of America have also been found to be rich in oil. It would be out of place to more than merely allude to the oil-wells of Canada, but there are oil-fields in several parts of Pennsylvania, in Ohio, Kentucky, and Virginia, while it is said that indications of oil have been found in many other States.

New Inventions and Ideas.

Progress of American Invention.—The best evidence of the progress which this country is making in science and the mechanic arts, is seen in the rapid increase in the number of inventions. Last week, five hundred applications for patents were received at the Patent Office in Washington, together with sixty-eight caveats; and it is stated, that two hundred and twenty-two patents will be issued this week. When we consider the comparative perfection of mechanics at the present time, it seems as though the whole field of invention has been covered, and that there is little more to be done. The statistics show, however, that the march of invention is now going on more rapidly than before, and the imagination is lost in the attempt to conceive what it will bring forth. The remarkable impetus which has been given to invention within the last year, is doubtless attributable, in a great measure, to the removal of those difficulties which used to beset the inventors in the procurement of patents by the simplification and excellent modifications in the *modus operandi* of red-tape-ism introduced by the present Commissioner of Patents, Hon. T. C. Theaker, who has proved himself to be a live man.

New Fire Annihilator.—"L' Extincteur.—A series of experiments with this machine has taken place under the superintendence of Mr. Casper, the licensee, in a field attached to Wilson's yard, Highbury. The powers of the engine were first tested, in extinguishing a fire which was supposed to have burst out on a stair-case. After this a shed or room, constructed entirely of wood, in which were placed several tarred barrels, a quantity of shavings and splintered wood, was set fire to. The flames were allowed to spread over the whole of the building before any attempt was made to extinguish them. The fluid which was poured upon them from the engine, in rather less than a minute, it is reported subdued the fire, about two quarts of the fluid only having been used in the operation. A tank filled with tar over which several pints of naptha was thrown was next set fire to. After burning furiously for some time, the engine was brought into play, and in fifteen seconds the fire was extinguished.

An Artist's Night Light.—An interesting conference on color as regards artificial light, has been given by M. Nickles, at Nancy. This professor spoke at great length on the power possessed by light (produced by the combustion of magnesium) to bring out certain natural as well as artificial colors with the identical brilliancy which they have by day. The presence of chloride of sodium in domestic lighting, he said, explains the impossibility of distinguishing certain shades of a dress, a flower, or a painting by night. A magnesium lamp, such as is used by photographers for night scenes would permit of artists working at night with as much certainty as by daylight.

Successful Experiment of Smelting Iron with Peat.—A successful experiment was made recently, in smelting iron with peat, which, in view of the efforts made in the Western States, will be interesting to our readers. The trial was made in McDougall's car wheel factory, with Hodge's peat. The cupola was charged with two layers of iron and anthracite coal. The third or topmost layer was iron and peat. The time was forty minuter less than with coal alone. The iron smelted by the peat was hotter when drawn off from the coals, and was said to be more compact and more like wrought iron, than the other. The test was a severe one, the proportion being twelve of iron to one of peat. The proportion for coals being seven to one. Renewed experiments are to be made shortly. The Grand Trunk Railroad it is said, is preparing to use it largely for running locomotives.

Correspondence.

Plastic Slate Roofing.

FLORENCE, MASS., Nov. 3, 1866.

WM. C. POTTER, New York.

Dear Sir,—I wish to inquire if you have ever formed an opinion on the following facts or appearances in Plastic Slate:

There sometimes appears in the mastic after it is spread upon the roof what some people call cracks, but which are really only veins of separated tar, or more properly, *unmixed* tar. It gives the roof the appearance of having little islands all over it, separated by channels. I do not like the looks of it, and our enemies will insist they are cracks, or the mastic running off.

Now, my philosophy about it is this. Roofers sometimes find their mastic too stiff and thick, and they put in more coal tar to thin it. This, I think, will not do, for when the slate flour and coal tar are put together they embrace each other cordially, and the process of combination or re-construction commences immediately, and in twelve hours afterwards more tar or more slate or any other substance will not be freely admitted and if the tar is put in it does not enter into the combination but floats around it as water does among pebbles and when the whole is spread upon the roof, the tar floats around and descends slowly and forms these little creeks and islands. I hold, therefore, that all Plastic Slate roofers should mix it right at first, and then strive to avoid any additions. Coal tar should not be spilled upon the roof, or even a brush with tar in it laid upon it. Keep the tar in its own place and do everything else carefully and wisely, and all will be well; work carelessly and ignorantly and all will be lost. We know we can make a good roof of plastic slate, but it will not do to expect it to make itself. As I give my experience and opinions freely, I hope others will do the same.

E. L. HAKMOND.

—

I have observed the same appearances, and conclude that Mr. Hammone has got hold of the true philosophy. There is much force and value in his exhortations to careful and judicious workmanship.

from first to last in the process of making plastic slate roofs.

W. C. POTTER.

Extraordinary Phenomenon.

The following singular statement appears in the Scotch papers:

For the last three months or so, Mr. Blyth, mining engineer, has been employed on behalf of Mr. Dixon, Govan Colliery, prosecuting a bore in search of iron-stone on the estate of Sir Wm. Stirling Maxwell, of Pollok. The exact position where the work is being carried on is in a field at an angle of the road leading to Pollokshawe, by Hagboose farm-steading and Haggs Castle, and about midway between these two places. For the last week it has been known to the workmen that gas, or fire damp has been eseaping from the bore, and a few days ago they had to extinguish an inconsiderable jet of it which had been accidentally ignited. However, on Thursday morning about eight oclock a more serious occurrence of the same nature took place. It appears thut one of the borers sat down on a tool chest situate about 40 feet from the bore and proceded to light his pipe. That considerable distance was not out of reach of the large volume of the damp however; for no sooner was the match struck than the poor fellow, who thought himself out of harm's way, was enveloped in a sheet of flame; but he was only slightly burned on the hands and face. Of course the fire was conducted to the fountain head at the bore, and there it was raging on Thursday night at ten oclock, and should no effectual means be found to put it out, it is the opinion of skilled persons that it may burn on for months, perhaps years.

When the fire broke out the workmen endeavored, with stout iron rods, which they used as rammers, to stop up the bore, but so strong was the rush of gas that three or four sturdy men were blown aside. A cast-iron boiler weighing several hundred weight, was then thrown on the top of the flame, but it was instantly rent, and tossed in the air. Had not the gas cracked it and had it got a good hold of the stiff clay around the bore, it would probably have burst like a bombshell, and the consequences to the workmen may be imagined. The boring apparatus having taken fire had to be torn down, and the rods left in the bore, which is 2¼ inches, and has now attained a depth of 420 feet, and passed through the sandstone strata. There is every confidence that the rods will be recovered uninjured on the fire being got under, as it is only on the gas coming to the surface and into contact with the air that combustion begins.

Practical Receipts.

A RECEIPT WORTH ONE THOUSAND DOLLARS.—So says the Ohio *Cultivator*. Take one pound of sal soda and half a pound of unslacked lime, and boil 20 minutes; let it stand till cool, then drain off and put in a strong jug or jar. Soak your dirty clothes over night, or until they are wet through, then wring them out and rub on plenty of soap and in one boiler of clothes well covered with water, add one teacup of washing fluid. Boil half an hour briskly, and then wash them thoroughly through one suds, rinse, and your clothes will look better than the old way of washing twice before boiling. This is an invaluable receipt, and I want every poor, tired woman to try it. I think with a patent wash-tub to do the little rubbing, the washer-woman might take the old Bible and compose herself on a lounge, and let the washing do itself.

OINTMENT FOR CHAPPED HUNDS.—Take sweet oil, 3 oz.; spermaceti, 4 oz.; pulverized camphor, 1 oz. Mix them together in a clean earthernware vessel by the aid of a gentle heat, and apply it warm to the hands night and morning. Another very good ointmint for chapped hands is made with a little fresh newly-churned butter and honey.

—A very good and economical foot-path can be made, by first levelling the surface of the ground, and then laying a bed of concrete, made with shingle and Portland cement, finishiug the surface with about half an inch of the best Portland cement and clean washed river sand.—*Builder.*

THE VOLTAIC PILE.—The Corps Legislatif of France has adopted the following projected law:—

Art. 1. A prize of 50,000 francs to be awarded to the author of the discovery which will render the Voltaic pile applicable, with economy, to the followidg purposes:—

To industry as a source of heat, to illuminating purposes to chemistry, to to mechanics, and to practical medicine. The rules to be adopted for the conditions and the judgment of the said competition will be determined by a decree.

Art. 2. In case that no prize shall have been awarded at the period fixed by the above article, the competition can be prorogued, by a decree of the Emperor for a new period of five years.

THE PARIS EXHIBITION.—A correspondent of the London *Daily News* writes: The industry of the world is to be divided at the Paris exhibition into ten groups, viz: 1. Works of art; 2. The means and application of the liberal arts: 3. Furniture and other objects intended for the household; 4. Clothes and other objects worn on the person; 5, Raw materials and extracts from, or modifications of them in their various degrees of elaboration; 6. Tools and processess used in the common arts; 7. Food in a natural state or preserved, in various degrees of preparations; 8. Living objects and models of agricultural establishments; 9. Living specimens, and model establishments of horticulture; 10, Objects exhibited specially with the view of bettering the physical and moral conditions of peoples. The places of honor in the exhibition have been reserved for France and England. The principal entrance to the exhibition will be exactly opposite to the Pont d' Iena it will open npon a noble vestibule. The visitor will find himself in a nave nearly eighty feet in hight, fifty in breadth, and more than three hundred in length. Its proportions will be those of a grand cathedral nave and it will be used to display all the monumental specimens of stained glass work. This gorgeous nave will be flanked on the right by the choicest English examples of art and industry, and on the left by the industrial *chefs d' œuvres* of France. This vast nave will cut through all the circles of the buildings, direct to the central or inner garden, will be, I apprehend, the most striking feature of the entire exihibition.

Intersection of Quartz Ledges.

In the course of the trial of the case of Sanguinetti *vs.* Keeny, in the District Court, says the *Nevada Gazette*, some interestig testimony was given by mining experts, in regard to quartz ledges intersecting and crossing each other. Several of the witnesses were from Grass Valley, where numerous north and south as well as east and west ledges have been worked; but none of them had ever known an instance in which two ledges crossed each other and continued on their course. William Watt stated, however, that many years ago (in 1855, we believe,) he knew an instance in which one ledge came bluff up against another on which a tunnel was being run, and he had since often regretted that he had not examined it more closely. That was before any attention had been given to the subject, and it is possible that instead of two ledges intersecting, that the rock in one had been misplaced by some convulsion, or what was merely a spur putting off at nearly a right angle. It is certainly very seldom that ledges cross each other, although there are many localities like Grass Valley, where they run in every direction. The most of the ledges in the vicinity of Nevada run nearly north and south, although there are a few that have an east and west course.

The Properties of Nitro-Glycerine.

M. Kopp the ingenious French chemist writes: that nitro-glycerine is a yellow brownish oil, heavier than water and insoluable in water, but soluble in alcohol, and ether; that prolonged exposure to only a feeble degree of cold causes it to crystalize in elongated needles; that when spread on the earth, coutact with a burning body does not easily inflame it, and cannot be made to cause it to burn more than partially; that a flask of it may be smashed on a stone pavement without the nitro-glycerine detonating; that it may be votalized without decomposition by a regulated heat, but cannot long undergo brisk ebulitioh without exploding; that a drop made to fall upon a moderately hot plate votalizes quietly, but on a red hot plate immediately inflames, burning like a grain of gunpowder, but without noise, and on a plate hot enough to cause the nitro-glycerine to boil immediately decomposes with a violent explosion. He adds that nitro-glycerine, especially when impure and acid, may decompose spontanenusly after a time, with disengagement of gas and production of oxalte and glyceric acids, and he regards it as possible that some of the mysterious explosions of nitro-glycerine which have recently taken place may have been due to this cause: "The nitro-glycerine, being enclosed in well stopped bottles and gaseous procncts of decomposition not being able to escape, exert a very great pressure on the nitro-glycerine; and under these circumstances, the least shock and the slightest motion, may bring about an explosion." And yet, the vapor which it gives off, being so poisonous, nitro-glycerine must not be kept in *open* vessels.

PURIFICATION OF WATER.—It is stated that there is good reason to believe, from certain experiments recent ly made, that any kind of water may be freed, not only from the impurities it contains in suspension, but also those it holds in solution, and may thus be made fit for drinking, by adding to it a very small amount of a solution of permanganate of potash, and then filtering it through a layer of magnetic oxide of iron, and carbon a few inches thick. The required mixture may be obtained by heating in a close vessel, red oligist ore and a small quantity of saw-dust.

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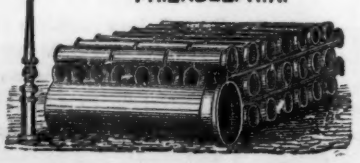

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Freights should be sent to our office day before sailing of steamer, with invoice, contents and value.

FINKLE & LYON'S
New Family
SEWING MACHINE
Should be known in
IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the Finkle & Lyon Family Sewing Machine to any other, he can return it and have back his money.

This machine has taken many of the highest prizes; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.
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Gas Fixtures and House Furnishing GOODS,

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Have a large and very choice assortment of GAS FIXTURES, which they offer at reduced prices, in view of the recent fall in gold. Their

Glass and Fire Gilt Chandeliers, are of entirely new designs,

And well worthy of attention by those who wish to purchase

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Malleable Iron Retort Lid.

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SILAS C. HERRING. JAMES B. FLOYD.

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All the cooking for a family can be done with Kerosene Oil, with less trouble and at less expense than by any other fuel.

Our stoves give no smoke or odor, and are not liable to get out of order, being as simple in every respect as a kerosene lamp. The Baker, Boiler, and Flat-Iron Heater are the only special articles of furniture required. For all other purposes, ordinary stove furniture may be used.

We would call attention to the fact that for the past three years, the Company has devoted itself almost exclusively to the manufacture of Kerosene Cooking Apparatus, and is prepared to guarantee that every article shall perform all that is claimed for it.

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Iron Founder & Pattern Maker

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A large assortment of Railing Castings constantly on hand, or made to order, at the shortest notice.

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☞A large stock of the usual sizes of Round Columns kept on hand.

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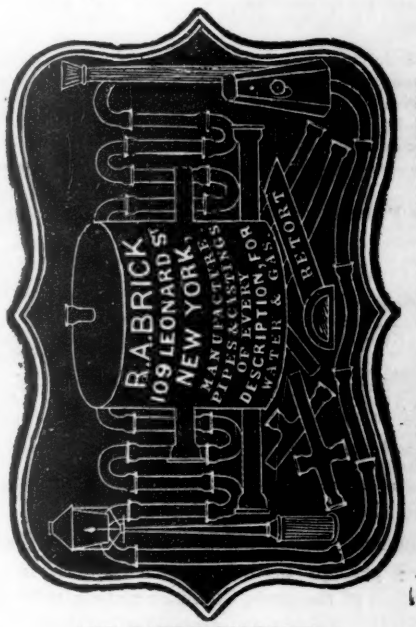

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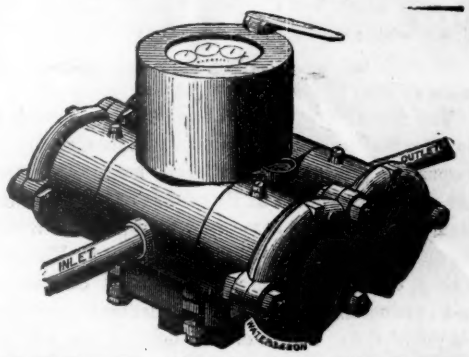

PATENT WATER-METER.

This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

WILCOX & GIBBS' SEWING MACHINE.

It is entirely noiseless. A patented device prevents it being turned backward. The needle cannot be set wrong. It received the gold medal of the American Institute in 1863. Send for a circular containing full information, notices from the press, testimonials from those using the machine, &c.

JAMES WILCOX,
Manufacturer, 508 Broadway, New York.

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London—135 Regent-st.	Sydney, Australia—212 Pitt-st.

Mining & Petroleum Standard
AND
AMERICAN GAS-LIGHT JOURNAL.

Published on the 2d and 16th of Each Month
At No. 22 Pine Street, New York.

BRYANT, CALLENDER & CO.,
EDITORS AND PROPRIETORS.

Profs. PARTZ & BUCK, Consulting Chemists.

FRIDAY, NOVEMBER 16, 1866.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its colums are devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

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Nevada Mines—Humboldt.

Among the many mining districts of the Pacific States, perhaps there is none more deserving the attention of the geologist, miner and capitalist than the State of Nevada, and especially Humboldt County, sitnated in the northern part of the State, bounded on the north by Oregon, east by Lander County, south by Churchill County, and west by Story and Roop Counties. It extends 139 miles from north to south, and 143 miles from east to west, with an area of about 17,500 square miles.

The first reports of this district were favorable as to its mineral wealth, but not as to its agricultural resources; but later explorations have discovered several villages north of Humboldt River where the lands are fertile and have timber and good water. South of the river is Grass Valley, and Pleasant Valley, both containing a large extent of farming and grazing land, capable of supporting a considerable population. North of Humboldt Lake are extensive flats or meadows, which will eventually be improved to advantage by the ingoing mining population.

The discovery of minerals containing silver was as early as 1859. Then came the discoaeries of and opening of the Virginia mines, and subsequently claims were located on the Humboldt, and the rock found to be rich in both gold and silver.

A corresdondent of the *New-York Tribuue* in the issues of Sept. 1st. and 2d. 1865, among other remarks, says:

"The mineral wealth of this region, undeveloped in its mountains, was in no degree over-rated even in those times of wild excitement. The great error was in the insane idea that the millions of imprisoned silver and gold could be realized without patient toil and the employment of large capitals and machineries." * * *

"A new era is dawning upon the Humboldt County contents. The extravagant valuations put upon them two or three years ago by their locators, have given way to moderation. Capital is invited by most liberal overtures—not repelled as formerly. Indeed never was presented such an opportunity for Capital to be invested safely and profitably in paying mines, as at the present time. Nor, with the prospect for railroad communication in the future, and the renewed interest in the mineral regions of the Pacific, consequent upon the close of the war, as shown in the current of capital already flowing hitherward, will there ever be again so favorable opportunities for investment tor prices are now at the bottom, soon to take a rapid upward shoot."

Events which have transpired since this was written go to show the correct estimate of the writer. The iron-horse is approrching this district from the east and the west. Late advices tell us that the railroad from Sacramento, has been commenced and is now running 93 miles on its way to the famous mines of the Echo district, which is immediately in the centre of the belt of silver described by the *Tribune* correspondent—about four miles from Unionsville, the county seat. The Humboldt canal, being built to facilitaté the business of mining in the Humboldt mines, passes between the railroad route as laid out and these ledges, so that when the road is completed, which will be in the coming year, it will have pierced and opened communication with one of the richest mining regions on this continent.

In 1870 the transit between New-York and San Francisco, will not exceed a week, and this will be a sort of middle station between the two great commercial cities, where the tourist travelling for pleasure, or the capitalist looking for investments, will find it a place to rest and recuperate amid the wild scenery and inhale the pure airs of these elevated regions.

WHSHINGTON MILL AND SILVER MINING CO.

Of the numerous companies that have foreseen the advantage of this section and forestalled coming events, by securing valuable property where fortunes are to be accumulated for an unlimited period, we know of none that are more favorably situated than the Washington Mill, and Silver Mining Com pany, whose office is at 30 Pine-st., N. Y. Their property includes the "Washington Series" of ledges located at the head of Panther Canon, in the Echo Miming District, Humboldt County, Nevada, on the western slope of the northern portion of Humboldt Mountain. They were discovered in March, 1863, by Mr. James Ferguson, an old California miner, and a prospector of long experience.

The property of this company comprises that portion of the Washington Series located as the "Madison Company," and embraces three individnal locations on the Series, of three hundred feet each. The ledges average three feet in width at the surface with bold out-croppiugs, showing fine silver throughout.

At a depth of 150 to 200 feet from the surface all three ledges come together forming one grand ledge of about 100 feet thick.

To test the ledges a shaft was sunk to a depth of some 40 feet and the ores tested by Prof. Charles Balback, giving a yield from $160 to several thousand dollars per ton. The property is being developed by a tunnel 300 feet long to strike the ledges at a depth of 200 feet. This will keep the mines free from water, and through it the mine can be worked many years.

The tests and working of these ores are extremely rich, and improve as they leave the surface ores. The company is organized upon a correct principal and has a solid basis. The officers and trustees are favorably known for business capacity, and integrity and we take pleasure in confidently recommending the company to the public; which would not be done except upon personal knowledge of the institution in all its details. And we believe it to be one where investments will be honestly expended, and every probability of a certain and large return in dividends. The President, Mr. J. Clements Stocker, is a gentleman whose experience eminently fits him for the office, and he is assisted by Mr. E. Page Davis, of Unionville, Nevada, who is familiar with this section.

HOW TO SEE THE WIND.—Take a polished metallic surface of two feet or more, with a straight edge—a large hand-saw will answer the purpose. Take a windy day, whether hot or cold, clear or cloudy, only let it not rain or the air be murky,—or in other words, let the air be dry and clear; it is better if the wind be steady, but this is not essential. Hold your metallic surface at right angles to the direction of the wind—*e g.*, if the wind is north, hold your surface directed east and west, but instead of holding the surface verticle, incline it about 45 degrees to the horizon, so that the wind, striking, glances, and flows over the edge (keeping it straight) as water over a dam. Now sight carefully over the straight edge at some minute and sharply defined object, and you see the air flow over as water flows over a dam. Make your observations carefully, and you will hardly ever fail to see the air, no matter how cold; the result is even better when the sun is obscured.—*Scientific American.*

We find this item going the rounds of the papers as a recognized scientific fact; but we must confess we do not "see it" in this light, if we may be allowed the cant, but significant term in this instance. Air and all kinds of gases, are rendered lighter or denser, according to the change in temperature and the amount of moisture suspended in it. Atmospheric air always contains from 1 to 1.5 parts of watery vapor, to every 100 parts by weight. The aqueous vapor is the most variable constiuent in the atmosphere. A south and easterly wind in this locality contains the most moisture.

Now the polished metal in this experiment, was doubtless not of the same temperature of the air or wind. If it is warmer, the air flowing over its surface becomes rarified, and changes its refractive power the same as the heated air that ascends from a hot stove-pipe; so that by observing objects beyond it, the rays of light proceeding from the objects to the eye are bent and changed continuously, as the warm and cool airmix and fluctuate together, to interpose media of different refractive power, which distort objects seen through it with constant changes, and this gives the idea that the air is moving, though not of itself visible.

The same effect is produced, if the saw is at a lower temperature. Then the cold metal absorbs the heat of the contiguous air, to reduce its temperature, and increase its density. The natural invisible moisture of the air is also possibly condensed, by the cold polished surface of the metal, sufficiently to render visible the vapor caused thereby, which would still more increase the ocular deception. Air or wind is not visible itself under any circumstances.

It is now a generally acknowleged fact, that Glycerin is not only the most economical, but also in every respect the most suitable fluid for filling Gas Meters, to keep them from freezing, and as the cold season is now near at hand, we wish to call the attention of our readers to the advertisement of Messrs. HARTMAN & LAIST, manufacturers of Glycerin in Cincinnati, who make a superior article free from acid, for the above mentioned purpose and supply the eastern market through their agent, M. L. Buckmann at 67 Wall-street, New-York City.

CONSUMPTION.—An eminent French physician proposes to cure all cases of consumption by administration of raw meats and spirits. He says that this method of treatment has been for some time in use, on the Continent of Europe, and, to his knowledge, has produced satisfaction in two thousand cases. The raw meat is reduced ta a pulp, and to conceal any unpleasant flavor it may have, is mixed with sugar. The proportion of alcohol used, which is administered separately from the meat, is about one-half that of the meat.

Ohio Petroleum Districts.

This State promises to take an important position among the oil-producing regions of the United States.

Several localities have been, and are being prospected, and some have afforded paying returns. The southeast portion of the State has beem more fully examined, and so far, with the greater success. The counties of Washington, Noble and Morgon, have yielded most oil for the labor expended; but a fair showing has been obtained in Knox, Cashocton, Homes and Ashland counties, and some few others.

In the vicinity of Marietta, many wells have been sunk with limited success in regard to quantity; but where oil is obtained, it commands a good price as a lubricator. In fact, wherever oil has been found, as a general thing its gravity has been low, and especially calculated for machinery and lubricating purposes, and readily commands a high price in the market. On this account wells which yield a few barrels even, per day, by pumping or otherwise, may be more profitable than the flowing wells of Pennsylvania that give many times the amount of the Napthas and lighter grades of oils.

THE PETER NEFF WELL.

A remarkable geological district having the same sand-rock formation, dip of strata, drainage and general geological features that is found in Venango County, Pennsylvania, is located on the borders of the great Apalachian coal fields in the counties of Knox, Coshocton, Holmes, and Ashland, forming the triangular basin between the Anticlinal ridges which determine the main course of the Kokasing and Mohican Rivers.

The Neff Petroleum Company have a large territory in this section, and have been and are now sinking a number of wells, some of which are producing oil, and there are indications that much more will be obtained, as the work progresses.

One of these wells called the Peter Neff Well is a most remarkoble phenomenon. In boring for oil a vein of water was struck at 60 feet—continuing the bore through several sandstone formations, until at a depth of 600 feet, the auger pierced through what seemed to be an immense reservoir of petroleum gas-carburetted hydrogen. A tremendous rush of water followed, forced through the entire length of the bore—600 feet—and was projected about 100 feet into the air, followed by a jet of gas.

An iron tube has been inserted, and now the intermittent action continues at intervale of about one minute. First a volume of water is projected high in the air, falling in a shower—then a rest of a minute—then a stream or jet of gas, preparatory to the next fountain display.

The gas is inflammable, and when lighted is projected with the water to a great height, affording a wonderful display of pyrotechny, which lights up the surrounding region in a most brilliant manner, and may be seen many miles around. The force of this gas is 180 pounds to the square inch, and when checked for a moment and suddenly released, it escapes with a roar similar to the steam from the safety valve of a high pressure steam boiler.

The property of the Neff Petroleum Company, includes several thousand acres and was located after scientific and careful surveys. Four wells have oil, and several others are being completed with, it is said every prospect of a successful oil yield.

We understand the Company is now disposed to lease some of its territory for oil boring purposes.

Jas. O Smith Esq., is Treasurer, and attends to the business of the Company, at his office No. 18 William-street.

—The ancient conduits about Jerusalem, are of wonderful structure. One, the lower level conduit, formed of stone, follows the contour of the country for twenty-five miles, passing along the bend of a depression in one case of 55 feet depth, and entering the city at an altitude of 2,450. The other, the upper level conduit, is tunneled through a hill at one part, and the blocks are so keyed together as to form a complete siphon.

PATENT CLAIMS.

Pertaining to Gas, Mining, Petroleum, Water, etc.

For the two weeks ending Nov. 6, 1866.

59,165—QUARTZ-CRUSHER.—Monroe L. Battell, New York City.

I claim the within-described ore-crushing machine constructed with two sets of crushing jaws and operated by a single intermediate or central shaft, substantially in the manner herein set forth.

59,301—DECARBONIZING FURNACE—Samuel H. Whitaker, Covington, Ky.

I claim, 1st, The enclosed auxillary chamber or chambers, B, communicating with the bottom of the furnace and provided at the top with one or more downward discharging tuyeres placed out of contact of the molten metal, for the objects stated.

2d, The annular blast-chamber, B, which surrounds the lower portion of a blast-furnace, and is provided with one or more pairs of opposite, and downwardly directed tuyeres, out of contact of the molten metal, substantially as set forth.

50,317—STILL FOR PETROLETM.—Allen Lapham, assignor to himself and Job Johnson, Brooklyn, N. Y.

I claim the arrangement of the flues, g, and h, and dampers applied to the still, e, substantially as set forth, for preveuting the still becoming heated above the liquid therein, for the purposes set forth.

I also claim forming the lower portion of the still over the fire narrower than the upper portion, as shown, and combining therewith the flues, g, as and for the purpose set forth.

59,319—PACKING FOR OIL WELLS.—Owen Redmond, assignor to Rufus S. Osgood, Rochester N.Y.

I claim a packing device for artesian wells, packing both the tubing and the sides of the well, when the said device is capable either of being adjusted higher or lower upon the tubing or *vice versa*, the tubing adjusted higher or lower within the packing, substantially as specified.

I also claim the combination of the hollow-wedge, G, and screw-collars, D, E, for the purpose of expanding the packing disk, b, substantially as described.

I also claim securing the packing device to the oil tube at any position by means of the screw, r, provided with a head or rim, around which passes a wire cord or chain, s, substantially as specified.

59,334—APPARATUS FOR DISTILLING PETROLEUM, ETC.—John F. Collins, New York City.

I claim the cup, A, the hoop, B, and the disk, C, provided with a stem, or its equivalent for adjustment, the several parts being constructed and arranged substantially as and for the purpose herein specified.

59,393—HYDRO CARBON BURNER FOR STILLS, ENGINES, ETC.—Isaac Helme, Philadelphia, Pa.

I claim the cup, A, the hoop, B, and the disk, C, provided with a stem or its equivalent for adjustment, the several parts being constructed and arranged substantially as and for the purpose herein specified.

59,446—CARBURETTDR.—Francis S. Pease, Buffalo, N. Y.

I claim, 1st, The combination with a carburetting chamber of a strong reservoir for containing a suppiy of compressed air, substantially as and for the purpose described.

I claim also the mode of operating the air-pump, with a water packing above the valve or valves, substantially as described.

59,531—PROCESS FOR THE RECOVERY AND PURIFICATION OF SULPHURIC ACID USED IN REFINING PETROLEUM, ETC. —Michael Barrett, Toronto, C. W.

I claim the recovery, purification, and revivication of the sulphuric acid spent in the process of refining petroleum, coal, and shale oil, by means of oxygen gas in the nascent state, by whatever means developed or obtained.

CATALOGUE of Scientific, Military Naval and Miscellaneous BOOKS just published, and sen free on application.

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163 192 Broadway, New York.

MAYNARD & TIEMANN,
Mining Engineers & Metallurgist
240 PEARL ST., NEW YORK,
—AND—
CENTRAL CITY, COLORADO.
G. W. MAYNARD. J. H. TIEMANN.

GAS TAR.

PROPOSALS WILL BE RECEIVED FOR LHE Purchase of the TAR of the ALBANY GAS-LIGHT COMPANY'S WORKS from the 1st January, 1867.
Albany, N. Y.. October 20th, 1866. 65-tf

J. FIRMIN,

Gas Fitting and Plumbing,

Nos. 64 & 66 Maiden Lane, cor. William-st.

Residence, No. 1147 Broadway, near 26th-st.

HOUSES FITTED UP WITH PLUMBING AND GAS WORK IN THE MOST MODERN AND IMPROVED STYLE. SEWERS CONNECTED. BRASS AND LATHE WORK. JOBBING IN ALL ITS BRANCHES ATTENDED TO WITH PUNCTUALITY AND DISPATCH.

GAS BILLS REDUCED.

Gas Lights perfected upon New and Unerring Principles.

REFERENCES:

At A. T. STEWART'S the gas-lights were improved and the gas bills reduced one-third, amounting to several thousands of dollars per year.—A. O. WILLCOX, No. 40 Wall-st.

At the TRIBUNE ASSOCIATION gas bill reduced upwards of one hundred dollars per month, and better lights given.—SAMUEL SINCLAIR Publisher.

At H. B. CLAFLIN'S, late Claflin, Mellen & Co., gas bill reduced—amount not yet ascertained—but it will be at the same ratio, and light improved.—Mr. BANCROFT.

At WM. SCHIEFFELIN & Co.'s, corner William and Beekman-sts., good light obtained and maintained at all parts of the premises, without additional cost—a result despaired of even by the Gas Co. owing to the deficiency of supply. No deficiency by FIRMIN'S system.

Similar results guaranteed under similar circumstances, or NO CHARGE. 65-88

GAS-METER GLYCERIN.

WE SOLICIT THE ATTENTION OF GAS COMPANIES to our GLYCERIN, which is now generally known, and is undoubtedly the best article ever used for filling Gas meters. Glycerin of 15° Beaume will stand 14° below zero without freezing, and the greater the density the lower the temperature it will stand.

We have sold to most of the large companies throughout the country, and annex a few certificates showing its value:

OFFICE OF THE CINCINNATI GAS-LIGHT & COKE CO., CINCINNATI, OHIO, Nov. 25, 1865.

I take pleasure in stating that the glycerin furnished by W. J. M. Gordon & Bro, of Cincinnati, has been used in wet meters by this Company during the past two years, and has proved very satisfactory thus far. Having resisted the action of frost, and not evaporated more than about six per cent. each year.

The standard for density being 15° Baume's scale.

H. I. MILLER, President.

OFFICE GAS-LIGHT CO., BALTIMORE, Dec. 16, 1864.

MESSRS. W. J. M. GORDON & BRO.—Of the numerous fluids used by this Company in their gas-meters to prevent freezing, none have given the satisfaction of the Glycerin manufactured for that purpose by the Messrs. Gordon & Bro, of Cincinnati, Ohio. As Glycerin will withstand a temperature below anything in the latitude of Baltimere without congealing, and as it does not evaporate like the alcoholic mixtures, once filling a meter will last for years. Yours respectfully,

J. MORTON SAUNDERS, Engineer.
COLUMBUS O'DONNELL, President.

Glycerin for Printers' Rollers.

It is coming into general use for this purpose, as rollers will not dry and shrink as when made in the usual way.

OFFICE OF THE DAILY & DOLLAR WEEKLY TIMES, CINCINNATI, Nov. 27th, 1865.

I hereby certify that I have used the Glycerin manufactured by the Messrs. W. J. M. Gordon & Bro., of this city, in the manufacture of printing rollers, and find it a most valuable addition to the composition in general use. THOMAS F. WINTER,
Pressman Times Office, Cincinnati, O.

November 29, 1865.

We have used the Glycerin manufactured by W. J. M. Gordon & Bro, of this city, for the last seven years. We find it in our line of business—printing playing cards, using colored inks to a great extent,—a very superior and indispensable article. We use about one-sixth quantity of it to the amount of molasses in making our rollers. We find it prevents them from shrinking up, and causes them to retain the desired "tack." We confidently recommend the article for the desired purposes. LONGLEY & BROTHER,
Playing Card Manufacturers, Cincinnati, Ohio.

Glycerin is also used by the Cincinnati Commercial and Enquirer, to whom we refer.

We manufacture Glycerine of every quality used, and from our advantage in material we are enabled to sell it lower than any manufacturer in the country.

W. J. M. GORDON & BRO.,
MANUFACTURING CHEMISTS AND DRUGGISTS.
63] N. E. Cor. Central-ave. and 8th-st., Cincinnati, Ohio.

WILLIAM TAYLOR & SONS,

COLUMBIAN IRON WORKS,

Nos. 11, 13 & 15 Adams Street, Brooklyn, N. Y.

MANUFACTURERS OF ALL KINDS OF

Castings, Iron Buildings Store Fronts, Columns, Girders and Beams.

Steam Engines, Mill Gearing, Hydraulic Presses for the manufacture of Linseed and Cotton Seed Oils, Sugar Mills, Single and Double Action Pumps, also Steam Pumps, Coal Oil Machinery, High and Low Pressure Boilers, Tacks, Kettles, Soap Curbs, &c.,

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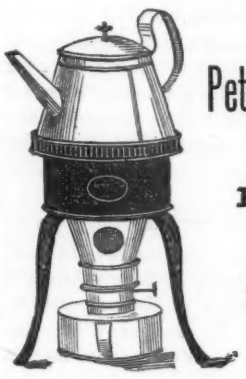

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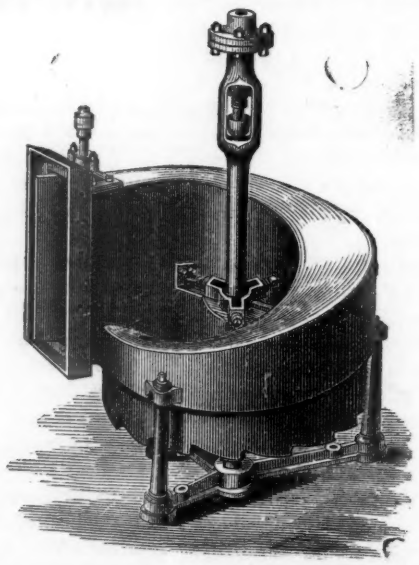

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600	02	150 00	30 00	180 00
750	39	188 00	35 00	225 00
1,000	64	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	63	750 00	85 00	835 00
3,500	66	875 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
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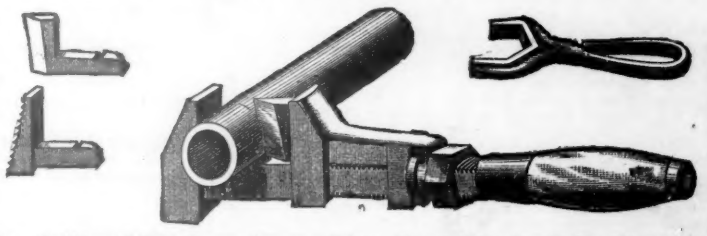

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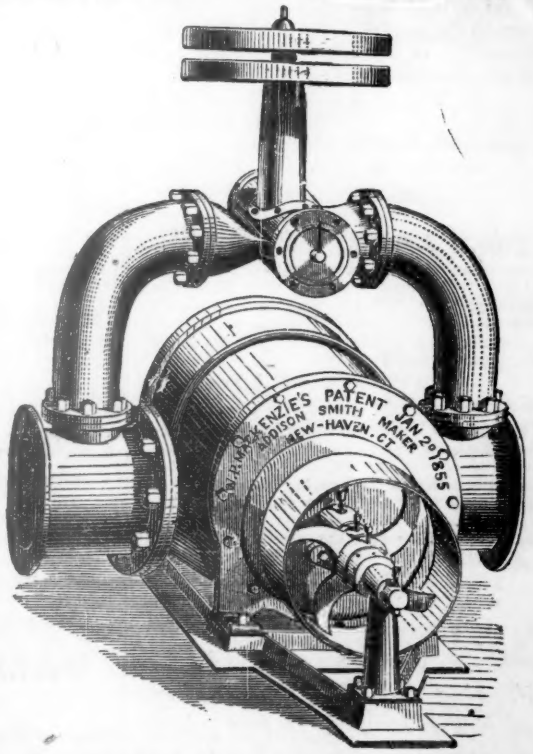

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IMPORTER AND DEALER IN WATCHES AND JEWELRY, Agent for the AMERICAN WATCH. Also every variety of Swiss and English watches, AT THE LOWEST MARKET PRICES.

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Oppsite John Street. 62-85

FOR SALE.

ONE SET 13-INCH HYDRAULIC MAINS FOR Five Benches of three retorts each, with Dip, Bridge and Stand Pipes and Mouth Pieces complete. Apply at the Office of the

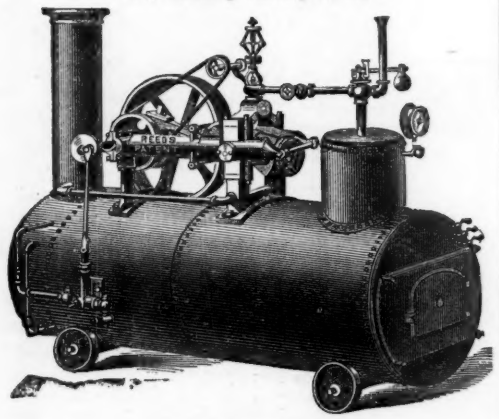
SALEM GAS-LIGHT CO.

62tf Salem, Mass.

REED & COGSWELL,

CONSULTING ENGINERES,

117 Liberty Street, N. Y.



MANUFACTURERS OF

Slide & Oscillating, Stationary & Portable

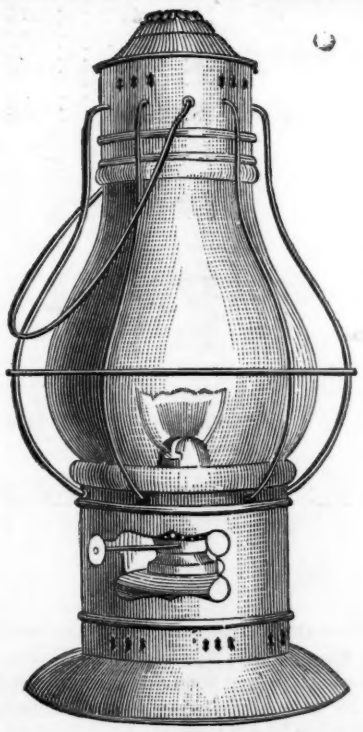
ENGINES,

Of all sizes. Also furnish all kinds of MACHINERY, TOOLS, AND GENERAL SUPPLY. Drawings of all kinds of Machinery executed to order.

JOHN A. REED. [63-S6] W. B. COGSWELL.

JAS. O. SMITH & SONS,

MANUFACTURERS of LANTERNS,



81 FULTON, 55 GOLD, AND 90 ANN STREETS, N. Y.

We would especially direct attention to LATE IMPROVEMENTS in our No. 4 SMITH'S LANTERN, (for which we have applied for patent,) having a GLASS LAMP so constructed that the light passes through the bottom of the Lantern; also, the guards are so arranged as to dispense with soldering the top part of the guard to the trimming, obviating the difficulty that so frequently occurs in other lanterns of the guards melting off.

We are manufacturing at our factory, Middletown, Conn., MANY OTHER STYLES AND SIZES, which can be seen at our Show Rooms, 81 Fulton-st., New York. TRIMMINGS, etc., always on hand.

☞ The Trade are invited to call and examine our Stock.

EDDY'S

Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

ALEX. M. LESLEY,

Manufacturers, No. 605 Sixth Ave., New York.

Send for Illustrated Circular. (136

KNITTING MACHINES

FOR

Families and Manufacturers,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

It will knit a variety of Stitches—the breakage of needles is trifling—the cost of needles is insignificant and the most delicate material can be knit pure and spotless, as the needles are not oiled.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Send for a Circular—Agents wanted.

DALTON KNITTING MACHINE CO.,

137] 537 Broadway, N. Y.

WEED'S

HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 20 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance. it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

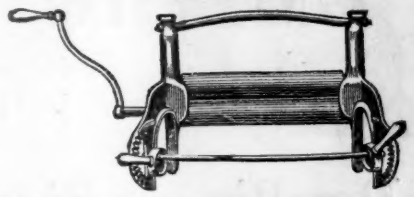
WEED SEWING MACAINE Co.,

136) 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog-wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $8 to $10 per day.

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*

That a *simple* machine is better than a complicated one.

That a Wringer should be *self-adjusting, durable, and efficient.*

That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.

That wood soaked in water will *swell, shrink,* and *split.*

That wood-bearings for the shaft to run in *will wear out.*

That the Putnam Wringer, with or without cog wheels, will *not tear the clothes.*

That cog-wheel regulators are not essential.

That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.

That all who have tried it pronounce it the *best* Wringer ever made.

That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price.

Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,

13 PLATT STREET, New York,

BENNINGTON, Vt.,

CLEVELAND O.

C, GEFRORER,

MANUFACTURER OF

Gas Heating Apparatus

OF EVERY DESCRIPTION,

Gas Burners, &c.

No. 529 COMMERCE STREET,

PHILADELPHIA, PA.

Burners for Wood, Coal Oil and Water Gas.

Gas and Lava Burner Tips

65 *Constantly on Hand.*

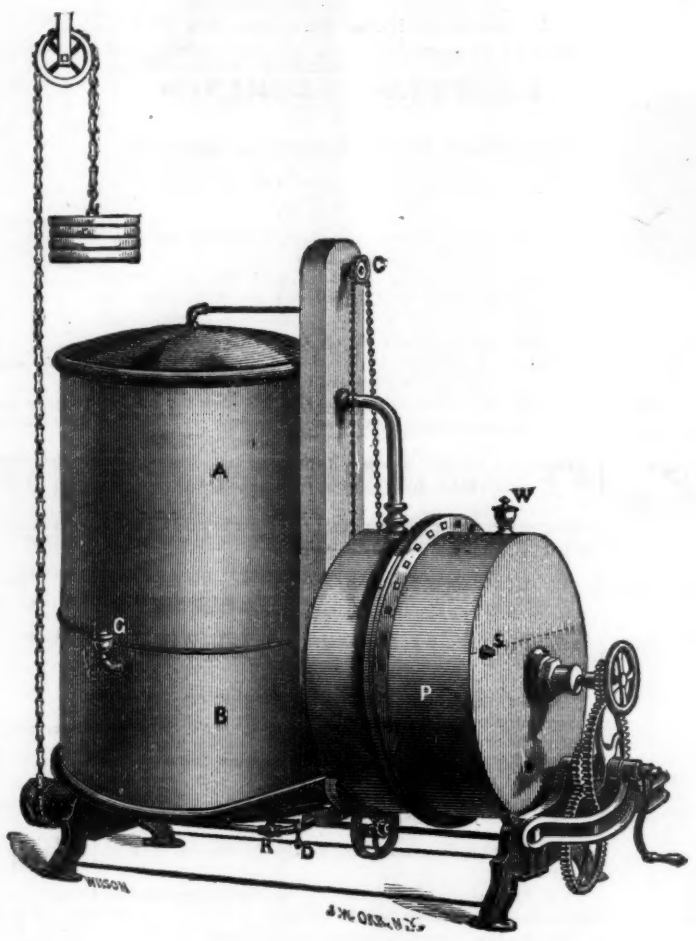
EMPIRE STATE GAS MACHINE,

LEVI STEVENS' PATENT, FOR SUPPLYING,

Dwellings. Stores, Factories and Public Buildings.

THE GAS GENERATED BY THIS MACHINE

Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the element brought into use, seam best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of this machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permanency, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



THE PRICE-LISTS OF MACHINES COMPLETE;

(Boxed and delivered on the cars at the Manufactory.)

No. 1,	$150,	5	Argand Burners.
do. 2,	250,	10	do.
do. 3,	350,	20	do.
do. 4,	450,	35	do.
do. 5,	600,	60	do.
do. 6,	1,000,	125	do.
do. 7,	1,500,	250	do.

This machine will produce the most brilliant and steady light without Fire or Heat, and is warranted to operate in every respect as represented.

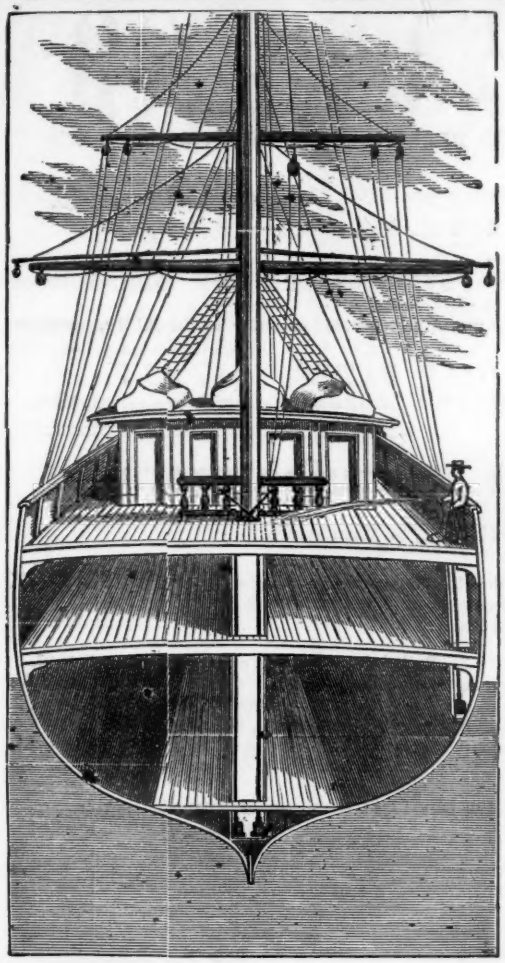
The EMPIRE STATE GAS MACHINE is the most SIMPLE and EFFECTIVE MEANS KNOWN FOR PRODUCING GAS WITHOUT HEAT.

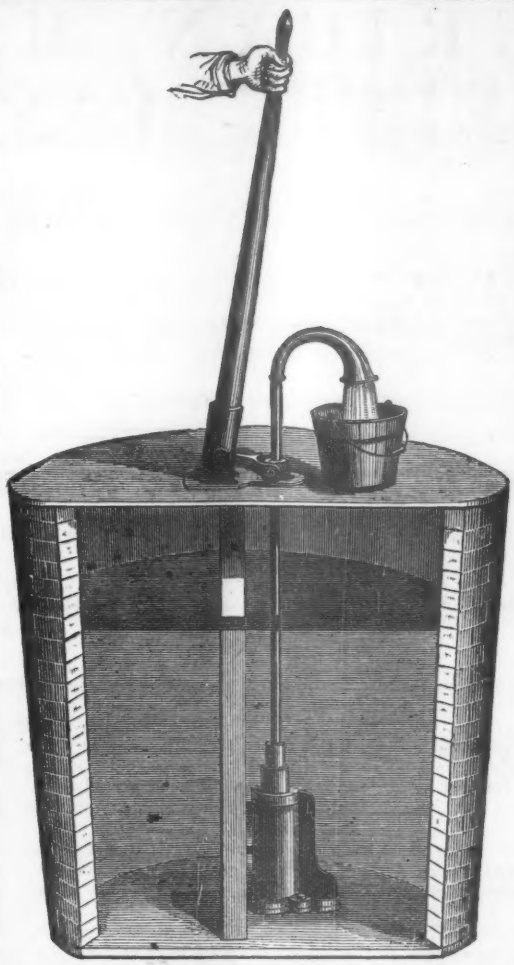
Its action is automatic, feeding itself with constant supplies of Gasoline, thus securing steady and uniform supplies of Gas. The gas produced is equal to the best known Illuminating Gas. It is as economical as any other, and is adapted to a wider range of use for Lighting, Heatin and Mechanical purposes. It will maintain its illuminating power under as great a degree of cold as any other. It is free from danger with the ordi nary care in using gas. Its remarkably pure and steady light is pleasant for the eye. It renders it easy for persons living remote from street gas pipes to enjoy the luxury of a pure GAS-LIGHT, at a COMPARATIVELY SMALL COST, AND WITH LITTLE TROUBLE.

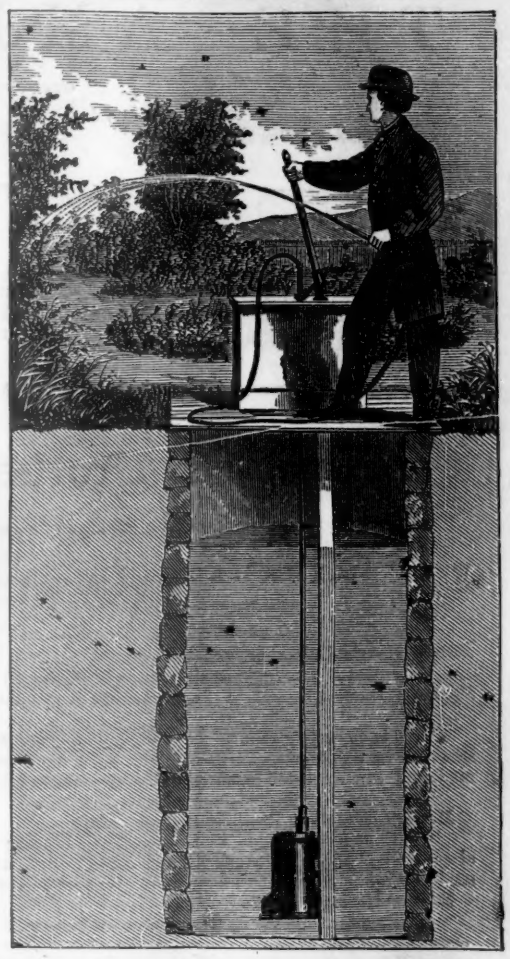
☞ The public are invited to witness its operations at our store. GASOLINE will be supplied by us, at market prices, or may be obtained from the various other sources of supply now going into operation.

MITCHELL, VANCE & Co., 620 Broadway, New York,

Manufacturers of Chandeliers and Gas Fixtures of every description. Also, Chandeliers, Brackets, Lamps, &c., for Coal Oil, adapted to Churches, Public Buildings, Dwellings, &c.







AMERICAN PUMP MANUFACTURING COMPANY,

DEPOT NO. 40 DEY STREET, NEW YORK.

A. B. VAN OLINDA, Secretary. C. V. B. OSTRANDER, Treasurer. E. BEADLESTON, President.

STATE AND COUNTY RIGHTS FOR SALE.

Pumps, completed, will be delivered from the manufactory of the Company, to parties purchasing rights at a royalty of One Dollar each.

THE PATENT SUBMERGED PUMP.

This valuable Invention, now first introduced, will, it is believed, supersede all classes for any purpose in use at the present time.

ITS ADVANTAGES.

First.—SIMPLICITY. The entire pump is composed of but six parts, all of cast-iron, which can be put together by any mechanic.

Second.—DURABILITY. From the fact that it is always submerged, it is perfectly lubricated, and requires no packing. As no water can remain in the pipe when not in motion, there is no danger of freezing.

Third.—CAPACITY. It is contended that, for the power applied, this Pump excels all others. The No. 1 (the smallest size,) of this Pump, with the power of one hand, has a capacity of thirty gallons per minute, and will throw a stream seventy feet in the air.

Fourth.—CHEAPNESS. For economy, this Pump surpasses all others, its first cost being about one-third less than that of other Pumps of the same capacity, and being much less both in size and weight, there is a great saving in transportation.

ITS USES.

First.—For a House Pump; the smallest size of the patent Submerged Pump is sufficient for all family purposes. Placed in a well or cistern, water may be conveyed to every room in a common sized house.

Second.—For a Farm Pump; for all purposes connected with irrigating, watering stock, etc., etc. This Pump can be placed in running streams, ponds, bayous, etc., and water conveyed to any required distance.

Third.—For a Ship Pump; Any ship owner or captain, with short experience in the use of this Pump, will give his unqualified approval for ship purposes, either to be used as a bilge pump simply, or for washing decks, etc. From its simplicity, as a bilge Pump it will be found entirely free from choking, and will clear grain, dirt, stones, etc., with ease.

Fourth.—For a Factory Pump, or for air in Oil Wells, for Breweries, or for pumping acids, hot liquors, etc., it is invaluable. It cannot be affected by any liquid.

Fifth.—To all Directors and Officers connected with mining interests, the PATENT SUBMERGED PUMP presents great advantages.

The experience of the last five years have clearly proved at what great expense, both in first cost and freight, it has been necessary to be at to secure the proper means of expelling water from the mines, quarries, etc. With this Pump an immense saving is effected in both instances, as in first cost it is much less than other Pumps of the same capacity and power.

Its principle is that of a Double-acting Force Pump, with a heavy double-acting piston cast in one piece, and a double-acting iron valve within the same, without the use of leather valves or any packing whatever.

DIRECTIONS FOR ADJUSTING PUMPS.

1st. Find the exact measurement of the well or cistern from the extreme bottom to the top or curb, after which make such an allowance as may be required, above the curb or top, as will accommodate the sized vessel required to be used, and in respect to the quantity of pipe required, always deducting for the length of the Pump and the space between the bottom and the Pump. 2d. Provide a plank, to which the Pump must be secured, not less than seven inches wide by two or two and a half inches thick, which should reach from the bottom to the top of the well or cistern, always placing the plank on the side of the well or cistern. 3d. Before putting the plank into a well or cistern, fit and bolt the Pump to the plank, and screw the pipe firmly in, taking care to have the Pump not less than one foot from the bottom of a well, nor less than six inches from the bottom of a cistern. Yet, if the water be six feet deep in a well, then adjust the Pump three feet from the bottom, and in like proportion as the case will permit, always being governed by the depth of water in the well, and always observing the necessity of securing the plank at the bottom of the curb, by braces across the well, and standing perfectly plumb and solid under the platform orcovering of the well, when the fulcrum can be astened to the platform, taking care to give the pipe free action when in motion.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishmen, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by
HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000. JOHN C. CRESSON, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entir8 satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.
G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanshipall we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their orrectness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those mported from Europe, or made by any of the manufactur in the United States. Respectfully Yours GEORGE WIEGAND, Inspector of Gas Fittings, Philadelphia

C. GEFRORER,

MANUFACTURER OF GAS BURNERS,

529 Commerce Street, Philadelphia, Pa.

Burners for Wood, Coal Oil, and Water Gas. Brass and Lava Burner Tips Constantly on Hand.

GROVESTEIN & CO.,

PIANO FORTE MANUFACTURERS,

499 BROADWAY, NEW YORK.

THE ATTENTION of the public and the trade is invited to our New Scale, Seven Octave, Rosewood Piano-Fortes, which for volume and purity of tone are unrivalled by any that have hitherto offered in this market. They contain all the modern improvements, French Grand Action, Harp Pedal, Iron Frame, Over-strung Bass, etc., and each instrument, being made under the supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVESTEEN PIANO-FORTE"
RECEIVED THE HIGHEST PREMIUM AT THE
CELEBRATED WORLD'S FAIR.

Where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvement we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES.

No. 1,	Seven Octave,	round	corners,	Rosewood, Plain Case, $275
No. 2,	"	"	"	Heavy Moulding 300
No. 3,	"	"	"	Louis XIV style 325

a fac-simile of the accompanying cut.

TERMS—Net Cash, in current funds. Descriptive circular sent free on application.